



**U.S. Fish & Wildlife Service**

**Great Dismal Swamp  
National Wildlife Refuge  
and Nansemond  
National Wildlife Refuge**

*Highlights of the  
Service's Preferred  
Alternative of the  
Draft Comprehensive  
Conservation Plan  
March 2006*

Comprehensive Conservation Plans provide long-term guidance for management decisions; set forth goals, objectives, and strategies needed to accomplish refuge purposes; and identify the Fish and Wildlife Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

# What is a Comprehensive Conservation Plan and why is it needed?

The Comprehensive Conservation Plan (CCP) is a management tool that will determine the management direction (goals, objectives, and strategies) for the Great Dismal Swamp and the Nansemond National Wildlife Refuges for the next 15 years (2005-2020). The plan includes an Environmental Assessment (EA). The EA identifies three alternatives for managing the refuges, and discusses how each of these actions will affect the physical, biological, cultural, and socio-economic environments.

Discussed in this document is the Service's preferred direction of management, *Alternative B*, from which, if chosen, the final CCP will be developed.

The preparation of CCP's on national wildlife refuges is a requirement of the National Wildlife Refuge System Improvement Act of 1997. The preparation of an environmental assessment for this planning action is required by the National Environmental Policy Act of 1969 (NEPA). NEPA provides a process from which the public may gain an understanding of and make input into the development of the CCP.

The draft CCP / EA is intended to:

- Provide a clear statement of direction for the future management of the refuge.
- Provide refuge neighbors, visitors, and government officials with an understanding of Service management actions on and around the refuge.
- Ensure that Service management actions, including land protection and recreation/education programs, are consistent with the mandates of the National Wildlife Refuge System.
- Provide long-term continuity and direction in management.
- Provide a basis for the development of budget requests for operations, maintenance, and capital improvement needs.

## Who developed the plan?

The Comprehensive Conservation planning process for the Great Dismal Swamp and the Nansemond National Wildlife Refuges began in August, 2001. It was then that the core planning team, consisting of representatives from the Fish and Wildlife Service, the Army Corps of Engineers, North Carolina Wildlife Resources Commission, and the Virginia Department of Game and Inland Fisheries were assembled to begin the process of identifying needs and direction for the development of the comprehensive plan. A mailing list was compiled of nearly 600 contacts and in December, 2001, a newsletter containing a response workbook was sent to everyone on the mailing list. Additional copies were distributed at the refuge headquarters and at all outreach events.

Four scoping and public information meetings were held in 2002: on January 8 in Elizabeth City, NC, on January 10 in Gatesville, NC, on January 22 in Suffolk, VA, and on January 24 in Chesapeake, VA. Approximately 300 people attended the scoping meetings, including elected officials from the neighboring communities, Congressional aids from the North Carolina and Virginia Senators' offices, and from the 4<sup>th</sup> District of Virginia, Congressman J. Randy Forbes, Jr.

The complete planning team met in February, 2002, to review public comments and explore management options. This was followed by the mailing of an *Update* newsletter in March, 2002, summarizing public comments from the workbook and other written comments, and from the scoping meetings. Another meeting of the planning team was held in June, 2002, to review considerations for management objectives and strategies, and to discuss a Wilderness Study Area proposal.

The core planning team then began working to formulate specific alternatives, objectives, and strategies that addressed each of the envisioned goals. Additional meetings and workshops were held with refuge partners and other interested parties to discuss issues of habitat management and public use. This process lasted into the spring of 2003 when a range of management alternatives was finalized. By June of the same year, the team was ready to consider environmental consequences for each alternative.

In February, 2006, the draft plan was approved by the Regional Director of the Fish and Wildlife Service. The final plan will be developed after considering the public's comments from another series of public meetings and a period of comment on the released draft plan.

## **What is the mission of the National Wildlife Refuge System?**

The mission of the National Wildlife Refuge System is "...to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." Considerations for wildlife will have first priority in the management of the refuge system. Wildlife-dependent recreation uses, such as hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation will be emphasized over other types of recreational activities. The admission of any activity will be through a review of "compatibility" to System and refuge missions.

## ***Great Dismal Swamp National Wildlife Refuge***

### **Why is this refuge important?**

Due to its geographic location and climate, the Great Dismal Swamp is known for its unique blending of northern and southern species. Even though it is a highly disturbed ecosystem, it has retained at least remnants of most of the historic vegetative components and habitats. Its mosaic of vegetative communities supports an astounding variety of vertebrates and invertebrates and its very size permits the maintenance of a viable bear

population. The stewardship includes not only the game species such as deer and bear, but the tiny hairstreak butterfly and orb weaving spider as well.

The Great Dismal Swamp is the largest, most complex ecosystem in public ownership in the Northeast Region of the U.S. Fish and Wildlife Service. Inventories of the mammals, birds and reptiles have been completed and the amphibians, fish and plants have been surveyed. Little is known about the majority of the invertebrates. Untold decades will be needed to unravel the relationships of the plant communities to their inhabitants in this swamp environment.

With its proximity to urban populations, the Great Dismal Swamp has the potential to be a preeminent environmental laboratory for research and education. Working with the academic community and governmental partners research priorities must be developed that will aid in understanding and managing this complex ecosystem.

The refuge management must maintain the gene pools of the plant communities historically found here and their associated wildlife while research is prioritized, conducted and answers uncovered. Ongoing management efforts must focus on maintaining the variety of habitat types found on the refuge.

## **What is the purpose of the refuge?**

Great Dismal Swamp National Wildlife Refuge was established in 1974 for the primary purpose of protecting and preserving a unique and outstanding ecosystem, as well as protecting and perpetuating the diversity of animal and plant life therein. And, to promote a public use program when not in conflict with the primary objectives of the refuge, including in order of priority: wildlife and wildlands related research, environmental education, nature interpretation and wildlife-oriented recreation that includes but is not limited to wildlife observation and photography, nature-oriented hiking and canoeing, hunting, and fishing.

## **What is the vision for the refuge?**

The refuge will endeavor to restore the biological diversity of the Great Dismal Swamp ecosystem through hydrologic restoration and fire management. The refuge will support diverse flora and fauna that have historically existed within a healthy swamp ecosystem, including one of the largest populations of black bears on the east coast. Seasonally-flooded forests will be maintained as habitat for neotropical migratory birds and waterfowl. The rare Atlantic white cedar forests will be restored through forest management practices that promote natural regeneration. Remnant bogs, marshes, and pocosin habitats will be restored and maintained to enhance habitat diversity as well as provide potential habitat for the endangered red-cockaded woodpecker. Wildlife and wildlands-related research, environmental education, natural and cultural interpretation, and wildlife-dependent recreation will be developed and managed in a manner that does not conflict with the primary objectives of the refuge and promotes awareness and understanding of the entire Great Dismal Swamp ecosystem. Refuge land acquisition will focus on those areas where public ownership is required for hydrologic restoration, for

restoring and maintaining fire-dependent habitats, and for habitat development for wintering waterfowl. Through partnerships, wildlife corridors that link the refuge to natural areas within the Albemarle-Pamlico watershed will be protected.

## **What are the major goals of the refuge?**

The following goals were developed for the Great Dismal Swamp National Wildlife Refuge to highlight specific details of our vision statement which will be emphasized in future management. The goals are not in order of priority.

1. Manage the area for the primary purpose of protecting and preserving a unique and outstanding ecosystem, as well as protecting and perpetuating the diversity of animal and plant life therein.
2. Protect and enhance Service trust resources and other significant species.
3. Support the restoration and protection of those areas within the Great Dismal Swamp watershed that either are remnants of Dismal Swamp habitat or can be restored to Dismal Swamp habitat.
4. Establish a public use program that will encourage awareness, understanding, appreciation and stewardship of the Great Dismal Swamp ecosystem while complimenting the refuge resource management objectives.

## **What are the significant concerns affecting fish and wildlife?**

The planning team identified the following as significant concerns, or issues, affecting the fish and wildlife found on the refuge:

- Limited information on habitat requirements is available for the majority of the swamp's faunal components.
- Several colonies of red-cockaded woodpeckers exist within the refuge watershed. The refuge has large acreages of maturing loblolly and pond pine which could serve as primary habitat for this highly selective bird. The Great Dismal Swamp NWR has been identified as a potential site for relocation under the Safe Harbor agreement. Management of mature pine stands is within the mandate of refuge programs, unlike the need to cut mature stands before loss of timber value when in private or corporate ownership.
- Through ongoing Swainson's warbler research on Jericho Ditch, nearly 50 years of data regarding this species as well as all neotropical species using this habitat have been collected. Staff from the Smithsonian Institution are continuing the mist-netting and banding of birds started by the well known naturalist and ornithologist Brook Meanley in the 1950's. Concern includes using the water control structures to hold back too much water in the ditches resulting in spring flooding through nesting season for warblers and other neotropical migratory birds, including the Swainson's

warbler. The flooding reduces food supplies for the adult birds and subjects the fledglings to death from exposure when they fall in the water upon first leaving the nest. Excess spring storage can also reduce needed discharge from adjacent upstream agricultural fields reducing the productivity of these privately owned lands. This type of research to other habits within the refuge needs to be expanded.

- The black bear is a species of great interest to the general public. First, it fascinates the urban dwellers that they really live in reasonable proximity to hundreds of bears living wild. On the other hand, the farmers are distressed when the bears make nightly forays into the corn crops or appear in their back yards. Bears crossing highways are struck and killed by motorists. Management of the bear population must incorporate elements of the swamp's carrying capacity, the seasonal variability in a food source and the number of undesirable contacts with the public.
- Other birds of interest include the bald eagles that have returned to nest after nearly 50 years, and the tundra swans and snow geese that use Lake Drummond as a roost and adjacent farmlands as feeding areas. Protection of these adjacent lands should be considered.

## **How will the proposed plan benefit fish, wildlife, and people?**

The plan will:

- Provide habitat for the endangered red-cockaded woodpecker and play a critical role in the woodpecker recovery in the mid-Atlantic.
- Provide wintering habitat for 10,000-15,000 tundra swans and snow geese.
- Improve and maintain habitat for over 200 species of birds; of which, over 90 species are neotropical migratory birds, including nearly 70 species that nest in the Great Dismal Swamp NWR.
- Improve and maintain habitat for one of the largest concentrations of black bear in the eastern United States.
- Improve public understanding and support for the conservation of wildlife within the Great Dismal Swamp ecosystem.
- Provide additional opportunities for wildlife-dependent recreation.
- Provide additional environmental education programs and visitor facilities.

## **What is the Service's Preferred Alternative?**

After consideration of Service policy mandates, refuge missions, prevailing issues, and public comments, the planning team developed a management plan, referred to as the "Service's Preferred Alternative," to best address the direction of the vision for the refuge. Resource management operations and visitor services will be expanded if funds become available to add facilities and staff to support these operations. Phases of expansion would be anticipated as funds are allocated to enhance specific refuge operations that are identified and summarized as follows.

## What projects are planned for the next 15 years?

In the CCP projects, referred to as objectives, were identified to support the direction given by the refuge goals. Within each project, strategies were identified as management steps to fulfill that project. Rationales were given as project justification. Projects, strategies (referred to here as “Service’s Preferred Action”), and rationales (here as “why”) for the preferred management alternative are listed as support for each goal.

### **Goal 1. Manage the area for the primary purpose of protecting and preserving a unique and outstanding ecosystem, as well as protecting and perpetuating the diversity of animal and plant life therein.**

#### ***Project 1: Establish Natural Areas***

##### ***Service’s Preferred Action...***

- Identify and designate a maximum of 1,000 acres of Atlantic white cedar forests within the northeast portion of the refuge as Research Natural Areas.
- Identify and designate a maximum of 500 acres of mesic islands as Research Natural Areas within the Gates County portion of the refuge.
- Establish the 3,000 acre Lake Drummond as a Public Use Natural Area.
- Establish the Washington Ditch corridor as a Public Use Natural Area.

##### ***Why?***

The refuge has been assigned several special designations in recognition of the unique natural features incorporated into the refuge as well as to recognize the significant contributions of the refuge to the stewardship of wildlife resources. The refuge has been designated as a National Natural Landmark, requiring periodic status reports to the National Park Service on the overall condition of the refuge habitats. The North Carolina Natural Heritage Program has designated the North Carolina portion of the refuge as a Natural Heritage Area because the refuge incorporates habitats and plants that are rare in that state. Most recently, the Virginia Audubon Council identified the refuge as an Important Bird Area, recognizing the refuge as part of a global network of areas that contribute to the conservation of bird populations.

Research Natural Areas (RNA) on National Wildlife Refuges are part of a national network of reserved areas under various ownerships. This network is the result of a



designation system recognized by other federal land management agencies and the Federal Committee on Ecological Reserves. RNA's are intended to represent the full array of North American ecosystems; biological communities, habitats, and phenomena; and geological and hydrologic formation and conditions. They are areas where natural processes are allowed to predominate without human intervention. However, under certain circumstances, deliberate manipulation is used to maintain unique features that the RNA was established to protect.

The refuge was established to restore and protect a unique ecosystem. Atlantic white cedar forests and mesic islands are key components that have characterized the historic Great Dismal Swamp ecosystem. While a formal wilderness review concluded that these areas were not suitable for wilderness designation, these key areas should be recognized as being critical to representing remnants of the natural biological diversity of the Great Dismal Swamp.

Public Use Natural Areas (PUNA) are relatively undisturbed ecosystems or sub-ecosystems that are available for use by the public with certain restrictions for protecting the area. Such an area must possess exceptional value or quality in illustrating or interpreting an element of the natural heritage of the Nation. This designation is fostered only by the National Wildlife Refuge System, and it is separate and distinct from the RNA designation system.

The Lake Drummond scenery has remained largely unchanged over the centuries despite the fact that logging, ditching, and road construction have surrounded the lake. The Washington Ditch was originally constructed by George Washington's slaves in the 1760's, and the entire area along the Washington Ditch has been logged prior to the establishment of the refuge. Nevertheless, the history of the area, the fact that the Washington Ditch area was part of the original 49,000 acres that were donated to establish the refuge, and the fact that refuge visitors associate this primary visitor entrance as part of the "natural" Great Dismal Swamp argue for minimal development of this part of the refuge.

## ***Project 2: Forest Management***

### ***Service's Preferred Action...***

- Issue permits to contractors who can use helicopters and/or other specialized equipment to salvage Atlantic white cedar trees that were blown down by Hurricane Isabel.
- Permit conditions will outline "in kind" services that will require the contractors to repairs refuge roads and provide other administrative support needed to support salvage and restoration operations.

- Utilize commercial harvests of mature Atlantic white cedar to clear areas sufficiently for natural regeneration on 2,000 acres that are reasonably accessible by existing refuge roads.
- Utilize approved herbicides on 6,000 acres to reduce competition from competing vegetation in mature Atlantic white cedar stands that are not easily accessible to harvesting equipment.
- Promote partnerships with state forest management agencies, research institutions, and non-government resource management organizations to develop and evaluate forest management techniques.
- Implement hardwood removal and aggressive prescribed burning on 10,000 acres.
- Maintain these areas with prescribed fires occurring every 3 to 5 years.
- Maintain approximately 30 acres of the marsh that have already been restored by subjecting the area to prescribed fires every 3 to 5 years.
- Monitor vegetation and ground/surface water conditions to evaluate habitat maintenance techniques.
- Restore remaining acreage of the marsh utilizing mechanical clearing and prescribed burning to expand the total Remnant Marsh to 250 acres.

#### *Why?*

- Approximately 8,000 acres of Atlantic white cedar, a rare forest habitat, are 100+ years old and are expected to be lost to natural mortality within the next 20-30 years. If AWC is not regenerated in these areas, red maple and other less desirable species will replace Atlantic white cedar in these stands.
- The red-cockaded woodpecker is listed as “endangered” under the Federal Endangered Species Act and once inhabited the area now incorporated into the refuge. This species requires mature pine forests that are maintained by frequent fires. Biologists involved with recovery of this endangered species have indicated that the pine/pocosin forests within the refuge are potentially valuable habitat for this species if these areas are restored and maintained with frequent prescribed fires. These activities will support the refuge mission of “protecting and preserving a unique and outstanding ecosystem” as well as support agency recovery efforts for endangered species.
- The Remnant Marsh once covered over 250 acres and provided brood and feeding habitat for waterfowl and wading birds. The marsh has evolved into a maple-gum forest over the decades due to the exclusion of fire and mechanical clearing, so that the area is barely recognizable as a marsh. Wildlife species associated with this habitat, particularly several species of waterfowl and wading birds, would likely cease to inhabit the refuge with the loss of marsh habitat.

## ***Project 3: Hydrologic Management***

### ***Service’s Preferred Action...***

- Conserve water to restore natural hydrologic conditions within areas where cypress, maple, and gum are the dominant habitats.
- Monitor surface flooding conditions to assure that surface flooding does not interfere with ground-foraging neotropical migratory birds.

- Maintain ground-water levels within one foot of the surface within Atlantic white cedar stands.
- Adjust water control structures as needed to inhibit flood damage to refuge roads.
- Promote research and survey partnerships with research institutions, Corps of Engineers, and other government organizations to improve basic knowledge and interpretation of the refuge watershed.
- Cooperate with adjacent landowners along the Pasquotank River to allow proper operation and maintenance of the Newland flood-control dike.
- Assure that refuge water conservation measures do not result in flooding of adjacent neighboring private property.
- Continue current cooperative arrangement with the Corps of Engineers in which water release from Lake Drummond ceases at 15.75 MSL.
- Maintain water levels in ditches to support fire suppression and prescribed fire needs.
- Maintain water levels in ditches to support fire management needs in pine forests and red-cockaded woodpecker recovery areas.
- Support efforts to restore natural surface flow in those areas where off-refuge developments (e.g. US Highway 158, Norfolk-Southern Railroad) create abnormally wet conditions.
- Add water control structures to the Portsmouth/East Ditch watersheds if needed to implement prescribed burning operations within pine forests north of Lake Drummond that will restore and maintain fire-dependent habitats.
- Remove beavers and nutria, using lethal means, when habitat damage or interference with water management strategies (e.g. flooding private property) is detected.
- Control invasive plant species if major infestations are detected in waterways and marshes.
- Develop GIS surface flooding models to provide continuous assessment of water management strategies on wildlife populations and habitat conditions.

### ***Why?***

- Water conservation and manipulation is required to support the ecosystem restoration mission. Restoring seasonal flooding of forests supports nesting and brood habitat for migratory waterfowl (e.g. wood ducks). Monitoring surface flooding conditions to assure that conditions are favorable to ground foraging neotropical migratory birds supports refuge and agency objectives. Maintaining higher ground water levels within Atlantic white cedar forest supports restoration and maintenance of this rare habitat. Water handling and conservation capabilities support prescribed fires and fire suppression operations.

## ***Project 4: Fire Management***

### ***Service's Preferred Action...***

- Maintain 80-100 miles of roads to support fire suppression access for the refuge and Dismal Swamp State Natural Area.
- Utilize lightning detection services and aerial surveys to detect wildfires during periods of high fire probability.

- Establish and maintain cooperative agreements with state and local fire suppression agencies to support fire detection and suppression.
- Acquire additional access easements near the North Ditch and Corapeake Ditch to improve emergency access to isolated portions of the refuge.
- Implement hazard reduction burns within designated areas.
- Participate in wildlands urban interface programs that support reduction of fuel accumulations and development of fire breaks where off-refuge development and smoke-sensitive locations are threatened by refuge wildfires.

### ***Why?***

- Fire detection/suppression operations reduce the probability of long-lasting catastrophic wildfires that would threaten human health and property surrounding the refuge. Major highways, three airports, and considerable residential and commercial properties would be threatened if fires escaped from the refuge. Lightning from summer thunderstorms ignite most refuge wildfires, so most wildfires occur when surface and ground water conditions are favorable for ground fires of long duration. Long-lasting peat fires have been known to emit smoke for months and reduce air quality for lengthy periods of time. Early detection/suppression of fires reduces the chances of large fires developing; thus, reducing suppression time and expenses.
- Hazard reduction prescribed burning reduces the amounts of fuels in the forest. This would reduce the probability of major fires of long duration, which are difficult and expensive to suppress, as well as pose a greater threat to human health and private property.

## **Goal 2. Protect and enhance Service trust resources and other significant species.**

### ***Project 5: Red-cockaded Woodpecker Reintroduction***

#### ***Service's Preferred Action...***

- Implement mechanical clearing and prescribed burning to restore habitat in the designated areas.
- Translocate red-cockaded woodpeckers from suitable donor population into designated areas of the refuge.
- Promote the Safe Harbor program to engage private landowners in recovery efforts.
- Install artificial nesting cavities to support woodpecker nesting.

### ***Why?***

- Approximately 2,000 acres of pine/pocosin habitat within the refuge along the Virginia/North Carolina border have been identified as potential woodpecker habitat. A combination of mechanical clearing and prescribed burning will be required to restore and maintain this habitat. This portion of the refuge has an adequate road and ditch system to support equipment access and water transport capabilities to support the habitat restoration operations. Additional potential habitat exists within pine forests on the Dismal Swamp State Natural Area and on the refuge north of Lake Drummond, but these areas are problematic for inclusion into an aggressive prescribed fire program. The state park area contains significant fuel accumulations due to the exclusion of fires for decades, and some of the park's access roads may require extensive repairs before they can support access for fire equipment. The pine forests north of Lake Drummond may also require road rehabilitation to provide adequate access for fire equipment. In addition, urban interface issues (Norfolk/Southern Railroad, Hampton Roads Regional Airport, US Highway 58/460, commercial/residential development) along the refuge's northern boundary increase the complexity of prescribed burning in these forests.

## ***Project 6: Neotropical Migratory Birds***

### ***Service's Preferred Action...***

- Develop and support partnerships with the Smithsonian Institution, state wildlife agencies, Natural Heritage programs, and other research institutions to monitor neotropical migrant populations and habitat preferences.
- Support banding partnerships for neotropical migrants.
- Adjust water management and other refuge habitat management operations to enhance habitat for neotropical migrants, particularly Swainson's warbler.
- Develop surface flooding and successional models using GIS technology to evaluate habitat conditions that affect neotropical migratory birds.
- Establish a neotropical migratory bird focus area near Jericho Lane.
- Develop clearings of 5-10 acres using tree-girdling or small clear-cuts to establish foraging areas for neotropical migratory birds.
- Develop a trail to one of the habitat management areas to enhance interpretive and educational opportunities for neotropical migratory birds.
- Work with Partners in Flight to promote research, education, and management of migratory birds on the refuge.

### ***Why?***

- The large blocks of contiguous forests attract nearly 100 species of neotropical migratory birds to seasonally inhabit the refuge, and nearly 70 species to nest within the refuge. Atlantic coast populations of neotropical migrants are generally declining due to the loss of habitat. The refuge, however, is one of the few areas where populations are stable. The large populations and number of species of neotropical migratory birds make the refuge an ideal location to support long-term monitoring and studies of these species. Neotropical banding has been ongoing for decades within the refuge, and the Smithsonian Institution has been tracking

nesting activities for neotropical migrants, particularly the Swainson's warbler, since 1990. These surveys provide some indications on the status of neotropical migrants within the refuge as well as the mid-Atlantic region of the United States. In addition, these surveys provide feedback that can be useful in adjusting refuge habitat management operations to support neotropical migratory birds.

- Annual surveys for the Swainson's warbler have been accomplished since the 1960's in the northwestern quadrant of the refuge. Therefore, these surveys actually predate the establishment of the refuge and provide a solid base of data with which to measure population trends and population response to habitat changes. By focusing on a portion of the refuge where considerable data exist, habitat management and monitoring techniques can be refined and be used to identify other areas of the refuge where maximizing neotropical migratory bird population density is feasible.

## ***Project 7: Waterfowl Management***

### ***Service's Preferred Action...***

- Monitor and maintain existing marsh and bog restoration sites to support brood habitat for wood ducks.
- Monitor and manage public access to Lake Drummond to allow the area to be used by wintering tundra swans and snow geese.
- Support efforts by The Nature Conservancy, Virginia Department of Game and Inland Fisheries, and other organizations to protect farmlands that are used by waterfowl from development.
- Evaluate the need to expand the refuge acquisition boundary to acquire those farmlands where public ownership would enhance their protection and restoration for waterfowl habitat.

### ***Why?***

- Development pressures threaten to convert much of the farmland along the refuge's eastern boundary to other uses; thus eliminating these feeding areas for wintering swans and geese.

## ***Project 8: Black Bear Management***

### ***Service's Preferred Action...***

- Monitor black bear populations in cooperation with the state wildlife agencies and research/educational institutions to provide adequate demographic data to guide habitat and bear population management decisions on the refuge.
- Provide sites for emergency relocations of black bears in partnership with state wildlife management agencies.

- Work with states to acquire data on bears harvested under crop depredation permits and bear hunting.
- In partnership with the states and non-governmental organizations, conduct studies to compliment previous refuge bear population research that focus on the demography of black bears, genetics, and population size and growth.
- Cooperate with state wildlife management agencies in developing and implementing emergency response to nuisance bears within the refuge watershed.
- Initiate limited recreation bear hunting on the refuge (see Goal 4/Public Use/Hunting Opportunities).

#### ***Why?***

- The refuge contains one of the largest concentrations of black bears on the east coast of the United States. This large bear population, however, exists within an area that is surrounded by considerable commercial and residential development as well as major highways. The continued development of off-refuge lands has decreased the amount of bear habitat off the refuge. Increased traffic along existing highways and highway improvements along the refuge perimeter may eliminate natural corridors through which bears now traverse to other areas of habitat within the refuge watershed. These developments create nuisance bear issues, as bears visit residential areas, disrupt traffic, and increase crop depredation. Moreover, the off-refuge development may eventually create a genetically isolated black bear population that may adversely affect the overall health of the refuge bear population.

## **Goal 3. Support the restoration and protection of those areas within the Great Dismal Swamp watershed that either are remnants of Dismal Swamp habitat or can be restored to Dismal Swamp habitat.**

### ***Project 9: Habitat Protection and Restoration***

#### ***Service's Preferred Action...***

- Acquire the remaining properties within the current acquisition boundary when they are offered by willing sellers (approximately 4,000 acres).
- Cooperate and support efforts by neighboring cities and counties to restore and protect key remnants of restorable Great Dismal Swamp habitat outside the refuge acquisition boundary.
- Collaborate with and provide technical assistance to cities and counties when they are reviewing development proposals adjacent to the refuge and within the historic range of the Great Dismal Swamp.

- Promote the maintenance of key wildlife corridors by recommending appropriate wildlife passages be incorporated into highway designs.
- Partner with The Nature Conservancy, state wildlife agencies, and other non-government organizations to protect and restore seasonally flooded areas within the refuge watershed.
- Promote hydrologic restoration when opportunities develop (e.g. US Highway 158, Norfolk and Southern Railroad, Dismal Swamp Canal).
- Resolve boundary disputes, post the refuge boundary, and patrol/inspect the boundary to detect encroachment on the refuge and criminal activities.
- Cooperate and support protection of 7,000 acres of prior-converted farmland east of the refuge for the purpose of restoring early successional habitat for waterfowl and other wildlife management needs within the watershed.
- Cooperate and support protection of 15,000 acres of seasonally flooded forests south of US Highway 158 to expand habitat for neotropical migratory birds, red-cockaded woodpeckers, and black bears, as well as restore surface hydrology.

### *Why?*

- In 1972, the Dismal Swamp Study Act (P.L. 92-478) directed the Secretary of the Interior to study the desirability and feasibility of protecting and preserving the Great Dismal Swamp and Dismal Swamp Canal. Initially, a 210,000-acre study area was delineated to be considered for protection and restoration, and the Secretary ultimately recommended that approximately 123,000 acres be acquired by state and federal agencies for protection and stewardship. Over the past three decades, much of the land that was excluded from recommended public ownership has been developed and converted to other uses. This loss of habitat poses serious adverse ramifications for the refuge and surrounding communities. First, the loss of wildlife corridors threaten to make the refuge an ecological isolate, thus threatening the health of wildlife populations and decreasing “societal carrying capacities” for some wildlife populations such as black bear. Second, the refuge has arguably become the largest urban wildlife refuge in the United States, as nearby development now supports a neighboring human population of 1.6 million people. This adjacent human population and development complicates the habitat restoration mission of the refuge, since ecosystem perpetuation will involve hydrologic restoration and aggressive fire management that could potentially affect refuge neighbors. Finally, the continued development of historic “Great Dismal Swamp” habitat threatens the quality of life for humans within the watershed through the development of flood-prone areas where hydrologic disruption is significant, by a reduction of air and water quality, and by the loss of open space.



**Goal 4. Establish a public use program that will encourage awareness, understanding, appreciation and stewardship of the Great Dismal Swamp ecosystem while complimenting the refuge resource management objectives (see Appendix Map B).**

### ***Project 10: Hunting Opportunities***

#### ***What we prefer to do is...***

- Provide an annual deer hunt program for archery and shotgun in designated zones of the Great Dismal Swamp NWR on designated days in October and November (see Appendix Map C).
- Provide an annual black bear hunt program in designated areas of the Virginia portion of the Great Dismal Swamp NWR on designated days in November and December (see Appendix Map D).
- Coordinate with special needs organizations to identify ways to provide better hunting access for people with disabilities.
- Establish an annual hunter safety program at the refuge.
- Establish youth hunting opportunities.

#### ***Why?***

- Providing wildlife-dependent recreational opportunities, like hunting, helps foster an appreciation for wildlife and a sense of stewardship for the environment. There are limited public hunting opportunities in southeastern Virginia and northeastern North Carolina. By continuing to allow hunting on the refuge, we provide the surrounding community additional hunting opportunities, particularly to those who do not have access to private lands.

### ***Project 11: Boating and Fishing Access***

#### ***Service's Preferred Action...***

- Lake Drummond is open for boating and fishing during daylight hours, access via Feeder Ditch, year round.
- Continue to provide a fishing season permit, for April 1 to June 15, to Lake Drummond, access via Interior Ditch Road, during daylight hours.
- Promote fishing in southeastern Virginia and northeastern North Carolina by partnering with local municipalities and other organizations for off-site fishing events.
- Recruit and contract a private company to maintain a fleet of canoes/kayaks for rent.
- Provide guided canoe/kayak interpretive tours through the concessionaire.

### ***Why?***

- Fishing on Lake Drummond is allowed year-round during daylight hours when accessed via the Feeder Ditch on the east side of the refuge (10 horsepower limit). Utilizing a boat rental concessionaire, the Railroad Ditch entrance on the west side of the refuge would provide year-round access for boating and fishing on both sides of the refuge. In addition to concessionaire rentals, a fishing permit will be available April 1 through June 15 to allow access for private fishing boats (25 horsepower limit) to enter Lake Drummond by the Interior boat ramp.

## ***Project 12: Environmental Education***

### ***Service's Preferred Action...***

- Continue to offer teacher activity guides and refuge videos for the classroom.
- Outreach to teachers to encourage utilization of the refuge as an outdoor classroom.
- Provide field study equipment and field guides for loan to visiting school trips.
- Continue to participate in environmental education programs in schools.
- Partner with local universities and community colleges to develop and provide training on the Great Dismal Swamp NWR ecosystem utilizing refuge-specific teacher training for those school districts interested in providing professional development credits to their teachers.
- Purchase land and develop the Jericho Education Pavilion.
- Develop other site-specific biological and historical educational media, utilizing the latest technology and in compliance with Virginia and North Carolina state academic standards.
- Present at local, regional, and national education conferences to encourage teachers to discover the Great Dismal Swamp NWR with their students.
- Establish partnerships with local elder-hostel programs.
- Develop and implement a Junior Naturalist program in the region.
- Establish a cooperating agreement with the region's school systems to provide specific environmental education programs which incorporate refuge-specific service learning activities.
- Establish a library and resource center for teachers and students.
- Utilize the latest technology to share the refuge environmental education program with those unable to visit.

### ***Why?***

- As our population increases, understanding its impact on the natural world is becoming increasingly more important for both our quality of life and our economy. More and more people are removed from the natural world in their daily lives and understand it less. Audiences served will include the entire southeastern Virginia and northeastern North Carolina region, reaching both rural, agricultural-based, and urban communities.
- Whether it was early efforts to drain the swamp, the establishment of the Dismal Swamp Canal and canal life, or runaway slaves hiding in the swamp, the Great Dismal Swamp is deeply embedded in Virginia and North Carolina history. The swamp's ecosystem contributed greatly to the history of the region. Details of this

cultural contribution will be a part of the refuge's educational programs along with the biological aspects of the ecosystem.

## ***Project 13: Interpretation***

### ***Service's Preferred Action...***

- Produce and provide refuge publications on general refuge information and current issues.
- Provide year-round interpretive programs at several key locations around the refuge, in both North Carolina and Virginia.
- Expand natural history interpretation to include programs focused on resource management issues such as fire, Atlantic white cedar, red cockaded woodpeckers, bears and other urban conflicts of importance to the swamp ecosystem.
- Expand cultural history interpretation to include programs focused on the human impact on the swamp, timber and economic resources of the swamp, the Underground Railroad, and the Dismal Swamp Canal.
- Host annual events highlighting conservation celebrations such as International Migratory Bird Day, National Wildlife Refuge Week, National Public Lands Day and the Great Dismal Swamp NWR anniversaries.
- Update and maintain interpretive panels, boardwalks, and kiosks at Washington Ditch and Jericho Lane.
- Update and maintain interpretive panels and kiosks on Railroad/West/Interior Trail and Feeder Ditch Trail.
- Develop and maintain kiosk at Dismal Swamp Canal Visitor Center (under NCDOT).
- Contract a concessionaire to provide interpretive boat tours on Lake Drummond.
- Partner with the City of Suffolk to develop Great Dismal Swamp NWR exhibits for their visitor center.
- Develop interpretive exhibits and programs for the US Highway 17 visitor station to serve both the refuge's North Carolina and Virginia communities and the visiting public.
- Develop interpretive exhibits and materials for the Jericho Education Pavilion.
- Develop and produce interpretive materials for handouts at the refuge.
- Develop interpretive exhibits and programs for the contact station at Sunbury, North Carolina, to orient visitors traveling east toward Virginia Beach and the Outer Banks.

### ***Why?***

- The Great Dismal Swamp is an integral part of the natural and cultural heritage of the region. The swamp's role in the timber industry from the 18<sup>th</sup> to the 20<sup>th</sup> century and its role in the Underground Railroad are well documented, not to mention the establishment of the Dismal Swamp Canal and canal life. The Hampton Roads/Virginia Beach/Outer Banks region swells with tourists every year. In 2002, Virginia Beach estimated over 3 million visitors to the area. Colonial Williamsburg, approximately one-hour north of the refuge, identified over 929,000 ticketed visitors and countless numbers of people who did not purchase a ticket. The Outer Banks, in

North Carolina, also receives millions of visitors every year. Many of these people either travel past the refuge on their way to Virginia Beach, Colonial Williamsburg or the Outer Banks, or seek out the refuge. According to the North Carolina Department of Transportation, over 16,000 vehicles each day pass through the intersection of US Highway 158 and Rt. 32 in Sunbury, North Carolina. The Dismal Swamp Canal Visitor Center located on US Highway 17 in North Carolina estimates their visitation from 400,000 – 600,000 each year since their opening in 1989. The Center is located on a four lane portion of the highway, but a dangerous two lane section just to the north in Virginia is currently being re-aligned and improved to four lanes. At the completion of the road project, a significant increase in vehicle volume is anticipated.

## ***Project 14: Wildlife Observation and Photography***

### ***Service's Preferred Action...***

- Maintain Washington Ditch Trail and the Lake Drummond observation pier at Washington Ditch.
- Maintain approximately 50 miles of trails for foot or bike touring.
- Continue to provide access permits to nature-based tourism groups and outfitters, such as canoeing and kayaking, as well as local municipalities, to promote wildlife observation.
- Contract a concessionaire to provide canoe/kayak and bicycle rentals and interpretive boat and tram tours, based at the Desert Road visitor station (with a satellite at the US Highway 17 visitor station) using the Railroad/West/Interior Ditch access.
- Using environmentally friendly materials, pave public use access route Railroad/West/Interior and maintain boat ramp.
- Develop observation deck and trail at old cypress area on West Ditch Road.
- Develop observation/photography platform at West/Railroad intersection.
- Coordinate with the Army Corps of Engineers to provide year-round water access of Lake Drummond via Feeder Ditch, to develop a foot-bridge system across the Dismal Swamp Canal to access the Feeder Ditch hiking trail, and to accommodate boat tours to Lake Drummond.
- Develop trail along Feeder Ditch to Lake Drummond.
- Develop observation tower on Feeder Ditch Trail overlooking Lake Drummond.
- Using environmentally friendly materials, establish a paved interpretive auto tour route along Corapeake, Sherrill, Cross and Forest Line Ditches to highlight the Atlantic white cedar and other forest-related refuge issues.
- Using environmentally friendly materials, pave public use access route from White Marsh Road to parking area on Washington Ditch Trail.
- Using environmentally friendly materials, pave public use access route from White Marsh Road to parking area on Jericho Lane.
- As additional visitor facilities are developed, general access for some trails will be restricted to research and hunting only.

**Why?**

- The Great Dismal Swamp NWR is a wonderful place to observe and photograph wildlife; however, it is also very large which can provide an obstacle in getting to some of the more picturesque locations.

***Project 15: Volunteers******Service's Preferred Action...***

- Identify volunteer opportunities and establish “job descriptions” for those opportunities.
- Distribute volunteer internship opportunities to colleges and universities nationally.
- Conduct two volunteer training workshops per year.
- Hold an annual volunteer recognition and appreciation event.
- Expand volunteer recruitment efforts to include local/regional/national levels.
- Develop and implement a Junior Naturalist program to recruit new volunteers.
- Establish RV campsite pads with electric, water and sewer for 2-3 month term volunteers at Sunbury Refuge Station.

**Why?**

- In all programs volunteers are a valuable asset, bringing a unique element of local history and knowledge and, at times, providing technical assistance to refuge wildlife management activities.

***Project 16: Outreach******Service's Preferred Action...***

- Continue to serve as advisors in regional government conservation planning.
- Continue to work with conservation groups, such as The Nature Conservancy and the Izaak Walton League of America to partner in finding solutions to area environmental issues.
- Continue to share refuge facilities (e.g. conference room at the refuge headquarters) with state and local agencies.
- Offer off-site outreach programs, by request and as staff schedules permit, to local civic and environmental organizations with special emphasis on providing various audiences information about refuge management issues, including forest management, fire management, bear management, and protection of trust resources.

**Why?**

- The Williamsburg-Hampton Roads-Outer Banks region is rapidly becoming a densely populated urban area. Its residential population is experiencing some of the most dramatic rates of growth in Virginia. In addition to the services offered at the current level, it is critical that the refuge reach beyond its immediate borders to

educate the region on the Great Dismal Swamp NWR ecosystem and on how the activities around the refuge affect the health of the swamp and, in effect, the health of the surrounding communities.

## ***Project 17: Facilities for Visitor Services***

### ***Service's Preferred Action...***

- Develop the administrative headquarters/visitor station on US Highway 17 in Chesapeake.
- Convert the existing refuge headquarters in Suffolk to support concessionaire operations and serve as a refuge visitor service station.
- Establish a contact station in Sunbury, North Carolina.

### ***Why?***

- Public demand for improved visitor services was unquestionably the dominant issue presented at the public scoping meetings in January, 2002. Moreover, the establishing legislation for the refuge supported the concept of developing a visitor friendly refuge for wildlife-oriented educational and recreational activities. This concept was further corroborated and supported by the "Public Use Development Plan – Great Dismal Swamp National Wildlife Refuge" that was published by the U.S. Fish and Wildlife Service in 1979. Therefore, the vision that calls for developing major facilities for visitor services addresses a public demand, fulfills the legislated direction for the refuge, supports a long-standing agency position, and would enhance visibility and support for the Great Dismal Swamp National Wildlife Refuge and the National Wildlife Refuge System.
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## ***Nansemond National Wildlife Refuge***

### **What is the purpose of the refuge?**

Nansemond NWR was established in 1973 when the Department of Defense transferred 206 acres of land, primarily tidal marsh, to the Department of the Interior. In 1999, the refuge expanded to 423 acres when land was added from the adjacent Driver Naval Transmitter Facility. The addition to the refuge consisted primarily of upland areas that

were frequently mown to maintain cleared space for the tall radio transmission towers that used to exist on these areas.

## **What are the significant concerns affecting fish and wildlife?**

The refuge is too small to make a significant contribution to wildlife management priorities of the Service, and expansion of the refuge is not desirable or feasible due to the considerable development that has occurred within the Nansemond River watershed. Therefore, expanding Service operations on this unit is not desirable or feasible.

The upland area within the refuge has a history of spot contamination, including PCB contamination, from transformers that used to serve the naval transmitter towers. Therefore, development opportunities would be limited and would likely be confined to management and preservation of open space.

## **What projects are planned for the next 15 years?**

### ***Project : Aggressively pursue partnerships to support the management and stewardship of Nansemond NWR***

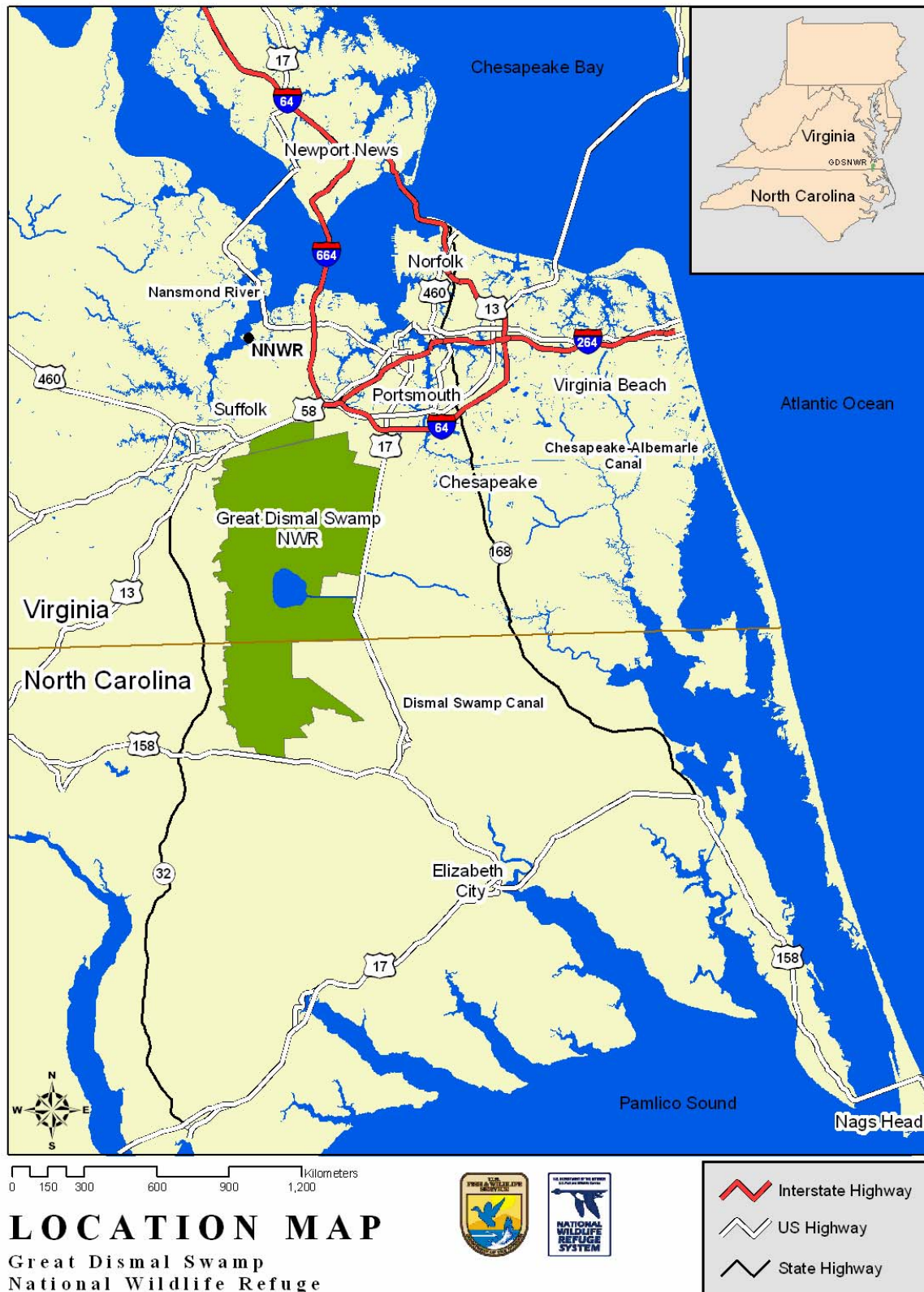
#### ***Service's Preferred Action... ..***

- Periodically inspect and maintain posted boundaries.
- Respond to any encroachment and violation of refuge regulations on the property.
- Pursue partnership discussions with city, state, and Native American representatives who have resource management, interpretive, or educational programs that require relatively undeveloped open space.

#### ***Why?***

- Nansemond NWR was established in 1973 when the Department of Defense transferred 206 acres of land, primarily tidal marsh, to the Department of the Interior. In 1999, the refuge expanded to 423 acres when land was added from the adjacent Driver Naval Transmitter Facility. The addition to the refuge consisted primarily of upland areas that were frequently mown to maintain cleared space for the tall radio transmission towers that used to exist on these areas.
- The refuge is too small to make a significant contribution to wildlife management priorities of the Service, and expansion of the refuge is not desirable or feasible due to the considerable development that has occurred within the Nansemond River watershed. Therefore, expanding Service operations on this unit is not desirable or feasible.
- The upland area within the refuge has a history of spot contamination, including PCB contamination, from transformers that used to serve the naval transmitter towers. Therefore, development opportunities would be limited and would likely be confined to management and preservation of open space.

## Appendix: Map A

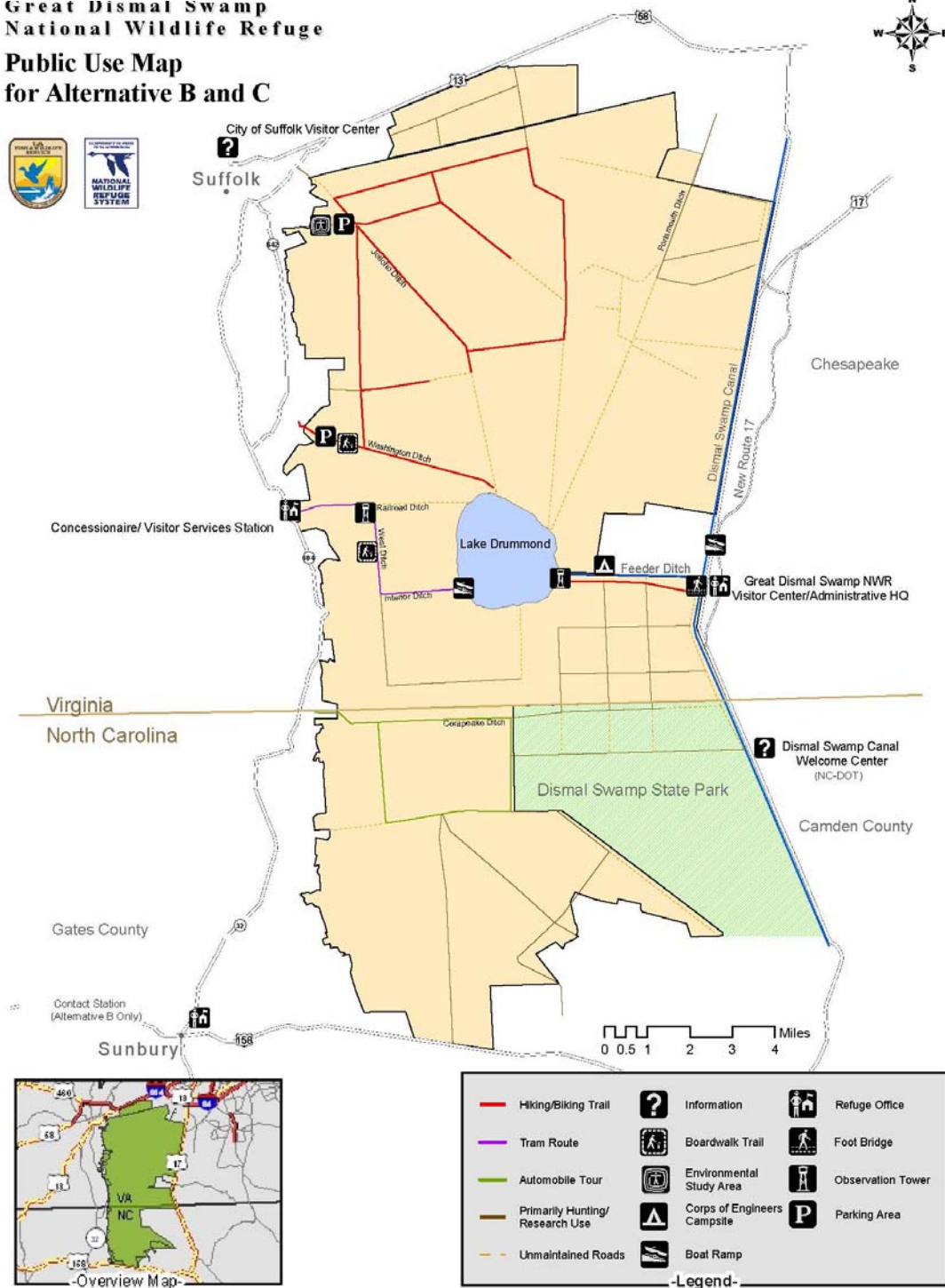




## Appendix: Map B

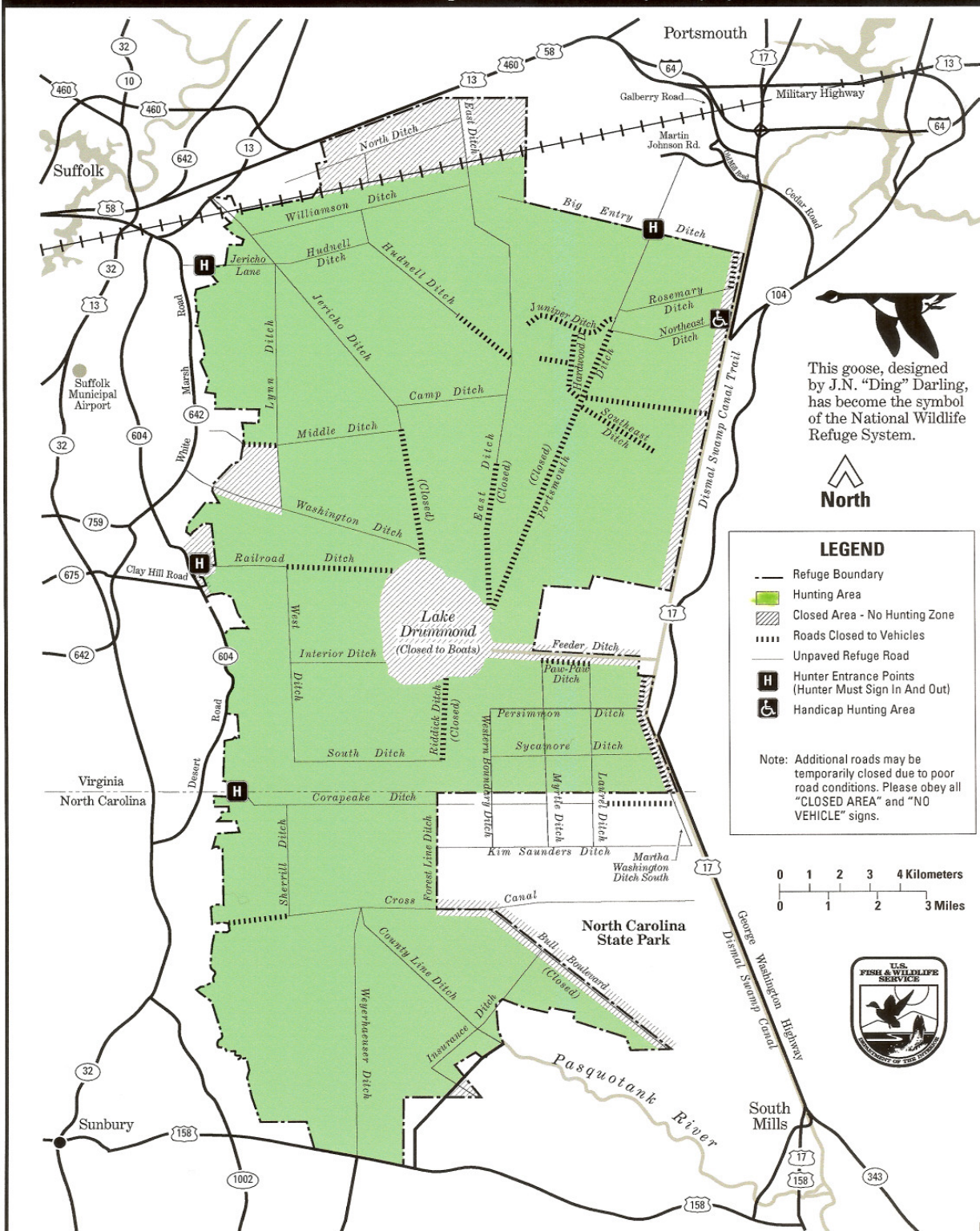
### Great Dismal Swamp National Wildlife Refuge

#### Public Use Map for Alternative B and C



# Appendix: Map C

## DEER HUNT MAP *Great Dismal Swamp National Wildlife Refuge*





## Appendix: Map D

